Response to Comments Des Moines TCE Risk Assessment Addendum

1. Section 1.1 does not mention that vapor intrusion was evaluated. Add to the text and resubmit.

Response: The text will be revised to note that groundwater data were used to evaluate potential risks from vapor intrusion.

2. Section 2.2.1, page 2-5. Please modify the text to explain why only soil samples collected from beneath the buildings were used in the Addendum and resubmit.

Response: The text will be revised to note that soils outside the buildings were evaluated during the original remedial investigation risk assessment and this addendum focused on portions of the site that had not previously been sampled, which included beneath the building foundations. This risk assessment will be used to assist in the risk management decisions concerning soils that could be exposed due to building demolition and foundation removal.

3. Section 2.3.1.2, page 2-9. Although both documents are cited in the text, please note that EPA's 2002 vapor intrusion guidance was superseded by the EPA's 2015 vapor intrusion guidance (EPA, 2015). Please remove all reference to the 2002 guidance and resubmit.

Response: The text will be revised as requested.

4. Section 2.3.1.2, page 2-9. The last sentence says that modeled indoor air concentrations can be found in Attachment 4. Should that be Attachment D? Modify and resubmit.

Response: The text will be revised as requested.

5. Section 2.3.2.1, page 2-13. When discussing the dermal absorption factor in relation to dermal contact with soil, the correct acronym is ABSd, not DAF (dilution attenuation factor). The ABS (or ABSd) is presented in the EPA RSL tables. The DAF is presented in the RSL table User's Guide under the discussion of soil to groundwater contamination. The EPA's RSL tables and associated documents can be found at: https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2016. Modify and resubmit.

Response: The text will be revised as requested.

6. Section 2.3.3.1, page 2-22. According to the FAQs about the update of the EPA's standard default exposure factors, the default skin surface areas for children and adults should be 2,373 cm^2 and 6,365 cm^2, respectively. The FAQs can be found at: https://www.epa.gov/sites/production/files/2015-11/documents/faqs_expf_directive_2015_sept.pdf. Modify and resubmit.

Response: The text will be revised as requested.

7. Section 2.3.3.1, page 2-22. We could find no place in the EPA guidance that recommends a 72 year exposure duration, as is proposed in the last bullet on this page. Please provide a reference for where this exposure duration came from in the resubmittal.

*Response: The text will be revised to explain that the exposure duration factor is being modified to adjust for mutagenic risks. The EDM_{adj} term is used in the dose equation to account for potential mutagenic effects. Age-dependent factors of 10, 3, 3, and 1 were applied to the EDs for ages 0-2, 2-6, 6-16, and 16-26 years, respectively and is 72 years [(10*2 years)+(3*4 years)+(3*10 years)+(1*10 years)].*

8. Section 2.3.3.4, page 2-26. The construction worker skin surface area should be 3,300 cm^2, as recommended in the EPA (2014). Modify and resubmit.

Response: The current EPA RSL User Guide (EPA 2016), identifies the skin surface area for the construction worker to be 3,527 cm^2; no changes will be made.

9. Section 2.3.3.5, page 2-27. The EPA (2014) recommends a child skin surface area of 2,373 cm^2 for both soil and sediment in a recreational use scenario. However, the risk assessment has that value for soil, and a different value for sediment, in its evaluation of the recreational use scenario. Modify and resubmit or explain why a different value is used for sediment.

Response: The text will be revised to explain why a different value is used. The text will note that it is assumed the child will be playing in the nearshore area of the pond and all sediment will be covered with water and no dust will be generated from sediment, thereby, eliminating sediment exposures to the face, lower legs, and forearms.

10. Section 2.3.3.5, page 2-27. The second to the last bullet on this page is confusing. It appears that the degree of susceptibility to mutagenic effects is assumed to be mathematically equivalent to years. The point of this bullet is unclear, as is a similar bullet on page 2-28. Regardless, we could not find an exposure duration of 32 years in the EPA guidance. Please clarify these sections and reference where the exposure duration was found and resubmit.

*Response: The text will be revised to explain that the exposure duration factor is being modified to adjust for mutagenic risks. The EDM_{adj} term is used to account for potential mutagenic effects. Age-dependent factors of 10, and 3 were applied to the EDs for ages 0-2, and 2-6 years, respectively and is 32 years [(10*2 years)+(3*4 years)]*

11. Section 2.3.3.5, page 2-28. Typically, we expect that the child recreational and trespasser scenarios would have similar exposure factor values. However, the values shown here are substantially different than the EPA's recreational scenario values, and no explanation for such a variance is provided. Modify to use the same values or explain why a different value is used for sediment and resubmit.

Response: The text will be revised to explain why different values are used. The site is located in a predominately industrial area and the nearest residential neighborhood is approximately one mile away. It is assumed that this will limit the frequency of exposure for the adolescent trespasser and this is the reason for less frequent exposures than if the site is developed as a park and a destination location.

12. Section 2.3.3.5, page 2-29. The assumption of 0.0125 L/d for the adolescent recreationalist lacks supporting rationale. And, the assumption of an exposure duration of 30 years for an adolescent trespasser is confusing. Please provide the rationale for this exposure duration and resubmit.

Response: The text will be revised to provide the rationale for the 0.0125 L/day ingestion rate. The text will note that the ingestion rate of surface water (IRSW) of 0.0125 L/day assumes, based on best professional judgment, that the adolescent will incidentally ingest water once every four visits. Therefore, using a swimming incidental ingestion rate of 0.05 L/day (EPA 2016a) on one-fourth of the total days (0.05 L/day × 0.25) is equal to 0.0125L/day. This is based on the assumption that because the small pond is shallow, it will not be used for swimming, and therefore exposure will be limited to wading along the shoreline and potential exposure would occur when the recreationalist would scoop water out of the pond using their hand.

13. Section 2.3.3.5, page 2-29. As noted earlier, the appropriate skin surface area value for an adult is 6,365 cm^2. The last bullet on this page uses a different sediment value than that used for soil. Modify to use the same values or explain why a different value is used for sediment and resubmit.

Response: The text will be revised to explain why different values are used. The text will note that since it is assumed the adult will be exposed in the nearshore area of the pond and all sediment will be covered with water and no dust will be generated from sediment, thereby, eliminating sediment exposures to the face, lower legs, and forearms.

14. Section 2.3.3.5, page 2-30. The adult skin surface area value is not that used in the EPA guidance for the recreational scenario. Please provide a reference for where this exposure duration came from or use the value provided in the EPA guidance in the resubmittal.

Response: As noted in the response to comment No. 13, the surface area value for sediment is based on the assumption that sediment exposure will be limited to hands and feet. The text identified that the surface area value was obtained from EPA's Exposure Factors Handbook (EPA 2011).

15. Table 4.5.1, page 16 of 49. The table uses an exposure frequency of 130 days, and an exposure duration of one year for the construction worker scenario. However, page 2-26 describes the construction worker potentially being exposed 5 days per week for 18 weeks. In calculating potential risk for non-cancer health effects, this would give an exposure frequency of 90 days, over an averaging time of 126 days, for an exposure duration of one year. Modify and resubmit.

Response: The text will be revised to match the table as requested and new risk values calculated.

16. Table 4.5.2, page 18 of 49. The construction worker scenario here makes no allowances for incidental ingestion of groundwater in a trench. An incidental groundwater ingestion value of 50 ml/d would be an acceptable value. Modify and resubmit, or explain why this is unnecessary.

Response: The text will be revised to explain that since depth to groundwater is approximately 12 to 15 feet below ground surface, there is likely to be minimal water within the construction trench, and dermal contact within a 12 foot deep trench may be possible. However, it is not likely that sufficient water would accumulate within the trench for incidental ingestion, so this pathway will not be quantitatively evaluated.

17. Table 4.10.1, page 44 of 49. Region 7 does not allow the use of fractional intake terms. Modify to use whole numbers and resubmit.

Response: The table and text will be revised as requested.